

What is claimed is:

1. A method for fabricating a hologram diffuser which comprises:

providing a substrate;
forming a resin layer on the substrate;
forming a hologram pattern in the resin layer; and
forming a smoothing layer on the patterned resin layer.

2. The method of claim 1, which further comprises:
forming color filters or thin film transistors at an upper portion of the smoothing layer.

3. The method of claim 1, wherein forming the hologram pattern includes:

locating an original hologram plate at an upper portion of the resin layer;
pressing to form a hologram pattern in the resin layer;
hardening the resin; and
removing the original hologram plate.

4. The method of claim 3, wherein the resin layer is made from a thermal hardening resin, and further including the step of curing the resin layer by applying heat.

5. The method according to claim 3, wherein the resin layer is made from an ultraviolet hardening resin, and further including the step of curing the resin layer by applying ultraviolet light.

6. The method of claim 1, wherein the resin layer has a thickness of 0.5 to 10 μ m.

7. The method of claim 1, wherein the resin layer is formed using spin coating, knife coating or extrusion coating.

8. The method of claim 1, wherein the smoothing layer has a thickness of 0.1 to 5 μ m.

9. The method of claim 1, wherein the smoothing layer has a refractive index difference of greater than 0.1 compared to the refractive index of the resin layer.

10. A liquid crystal display employing a hologram diffuser which comprises:

- a lower polarizer,
- a lower substrate arranged at an upper portion of the lower polarizer,
- switching devices arranged in a matrix on the substrate;
- a liquid crystal layer provided at an upper portion of the lower substrate;
- a hologram layer arranged over an upper portion of the liquid crystal layer;
- a smoothing layer provided at the upper portion of the hologram layer;
- an upper substrate arranged at the upper portion of the smoothing layer; and
- an upper polarizer arranged at the surface of the upper substrate.

11. The liquid crystal display of claim 10, wherein a refractive index difference between the hologram layer and the smoothing layer is greater than 0.1.

12. The liquid crystal display of claim 10, wherein the hologram layer has a thickness of 0.5 to 10 μ m.

13. The liquid crystal display of claim 10, wherein the smoothing layer has a thickness of 0.1 to 5 μ m.

14. The liquid crystal display of claim 10, wherein the hologram layer comprises a resin selected from a thermal hardening resin and an ultraviolet hardening resin.

15. The liquid crystal display of claim 10, wherein the liquid crystal display is a twisted nematic liquid crystal display.

16. The liquid crystal display of claim 10, wherein the upper polarizer and the lower polarizer are crossed perpendicular to each other.

17. The liquid crystal display of claim 10, further comprising a color filter layer between the liquid crystal layer and the hologram layer.

18. The liquid crystal display of claim 10, further comprising thin film transistors between the liquid crystal layer and the hologram layer.

19. The liquid crystal display of claim 10, wherein a shape of the hologram layer pattern controls a range of visual angle.

20. The liquid crystal display of claim 10, wherein the hologram layer diffuses light.

21. The liquid crystal display of claim 20, wherein the smoothing layer promotes the diffusion of light at the hologram layer.

P03 22. The liquid crystal display of claim 10, further comprising a black light unit disposed on the lower polarizer.